

REMARKS/ARGUMENTS

Pending Claims

Claims 1-18 remain pending in the application.

Personal Interview

Applicants extend their appreciation to the Examiner and the Examiner's Supervisor Don Sparks, for granting a personal interview with the undersigned attorney in the above-identified application on Wednesday, December 21, 2005. In the interview, proposed amendments to claim 1 submitted to the Examiner before the interview were discussed. These amendments have been incorporated into claim 1, as amended herein, and corresponding amendments have been made to independent claims 8, 9 and 10. Further, several of the dependent claims have been amended for consistency and to ensure proper antecedent basis for the claimed subject matter.

The following remarks incorporate the main points of the discussion during the interview with respect to support for the amendments made to the claims and the differences between the invention set forth in the amended claims and the primary reference to Fujibayashi.

Support for Amendments to Claims

As amended, the independent claim set forth that the first, second and third storage systems have first, second and third controllers, respectfully. The first, second and third storage systems are indicated in Figure 1 by reference numbers 2-1, 2-2, and 2-3. That is, each

of the storage systems is generally indicated by the reference number 2. Figure 2A is a diagram showing an example of a configuration of a storage system 2, according to the first embodiment of the invention. See page 5, lines 14-15 of the Brief Description of the Drawings, for example. As shown in Fig. 2A, storage system 2 includes a storage controller 21.

The claims have also been amended to include that the first storage system migrates data stored in the first primary volume to the second primary volume in the second storage system during remote copying of data from the first or second storage system to the third storage system. Support for this limitation is provided in the Summary of the Invention section, for example on page 5, lines 5-9 of the specification. Accordingly, the amendments made to the independent claims are supported by the specification and drawings as originally filed.

Claim Rejections under 35 U.S.C. §112

Claims 4 and 5 have been amended to overcome the objections noted in the Office Action. As amended, claims 4 and 5 comply with 35 U.S.C. §112, second paragraph.

Claims Rejections 35 U.S.C. §§102 and 103

Claims 1, 2, 4, 5, 8 and 9 have been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,640,291 (Fujibayashi). Claim 3 has been rejected under 35 U.S.C. §103(a) as being obvious over Fujibayashi in view of U.S. Patent No. 6,779,093 (Gupta). Claims 6 and 7 have been rejected under 35 U.S.C. §103(a) as being obvious over Fujibayashi in view of U.S. Patent Publication No. 2004/0078637 (Fellin). Further, claims 10-18 have been rejected under 35 U.S.C. §103(a) as being obvious over Fujibayashi in view of

“Structured Computer Organization” 2nd Edition (Tanenbaum). Applicants request reconsideration of the rejections in view of the foregoing amendments and for the following reasons.

According to the present invention, as set forth in the Background of the Invention section of the application, remote copying and data migration are known in the prior art. Remote copying involves a storage system at a local site that transfers data in a primary storage system to another storage system located in a remote location. Data migration is a technique of migrating data stored in an old storage system to a new storage system, for example, at the time of replacement of the old storage system with the new storage system. As set forth in the Summary of the Invention of the application, the present invention provides a remote copy system where data stored in a primary volume for remote copying can be migrated to a new primary volume while continuing the remote copying.

In the embodiment of the invention shown in Figure 1, for example, storage system 2-1 of local site 1 has a migration source primary volume V1 that stores data written with a host 1. Storage system 2-2 has a migration target primary volume V2 as a data migration target. Further, a storage system 2-3 of a remote site has a secondary volume V3 that becomes a remote copy target for the migration source primary volume V1 or the migration target primary volume V2 (see page 9, line 23-page 10, line 5 of the specification).

Claims 1 and 8-10 have been amended to include that the first storage system migrates data stored in the first primary volume to the second primary volume in the second storage system during remote copying of data from the first or second storage systems to the third storage system. On the other hand, in Fujibayashi, the remote copy procedure between the

primary storage 102 and secondary storage 104 is stopped in order to allow for the migration of data between the primary storage system 102 and the new primary storage system 103. See step 204 of Figure 2 and the description on page 3, lines 33-37 of the patent, which states that the remote copy connection between the old primary storage system 102 and the old secondary storage system 104, as well as communications between the old primary storage system 102 and host processor 101 are disrupted. See also column 4, lines 43-49 which explains that after migration of data from storage system 102 to storage system 103, a new connection 107 between new primary storage system 103 and the secondary storage system 104 is established and the remote copy function is started. Accordingly, in Fujibayashi, the remote copy function is disrupted during migration of data between the old and new primary storage systems.

In the interview, it was mentioned that Figure 8 of the Fujibayashi shows a configuration which includes old and new primary storage systems (102, 103) and old and new secondary storage systems 104, 601. This configuration is shown with respect to the embodiment of Fujibayashi in which both the old primary storage system and the old secondary storage system are replaced using the same migration process. Figure 9 shows the process. In step 904, the remote copy function between old primary storage system 102 and old secondary storage system 104 is stopped, and the communications between the old primary storage 102 and host processor 101 are disrupted. See column 6, lines 63-column 7, line 4 of Fujibayashi. Then, data migration of the remote copy configuration information is performed in step 908 and the new remote copy connection is established by removing connection 106 and establishing connection 107 between new primary storage system 103 and new secondary storage system 601. Then, in step 912 data migration is started (continued) and remote copy is

started between the new primary storage system 103 and new secondary storage system 601 on the basis of the already migrated remote copy configuration information using new connection 107. See column 7, lines 15-28 of Fujibayashi. Accordingly, in the embodiment of Figure 8, the remote copy function is stopped during migration of the remote copy configuration information from the old primary storage system 102 to the new primary storage system 103.

In view of the reasons presented in the foregoing discussion, Applicants respectfully assert that claims 1, 2, 4, 5, 8 and 9 are not anticipated by Fujibayashi et al. Further, although the 35 U.S.C. §103 rejection of claims 10-18 relies upon Tanenbaum as a secondary reference, Tanenbaum does not address remote copying and data migration. As such, the combination of Fujibayashi and Tanenbaum does not render claims 10-18 unpatentable under 35 U.S.C. § 103.


Gupta and Fellin are also used as secondary references in the rejection of dependent claims 3, 6 and 7. However, neither of these references is sufficient, when combined with Fujibayashi, to render the invention of claims 3, 6 and 7 obvious under 35 U.S.C. § 103, at least since each of these claims are dependent on base claim 1, which is asserted to be allowable for the foregoing reasons. Accordingly, Applicants request reconsideration of the rejections.

CONCLUSION

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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